

REMARKS

This Amendment is in response to the Office Action dated September 24, 2007. Claims 1 and 3-14 are pending. Claims 1 and 3-14 are rejected. Claims 1, 3, 4 and 12 are amended to clarify the invention. Claims 7-11 are cancelled. Accordingly, claims 1, 6 and 12-14 remain pending in the present application. No new matter has been added.

For the reasons set forth more fully below, Applicant respectfully submits that the present claims are allowable. Consequently, reconsideration, allowance and passage to issue of the present application are respectfully requested.

Applicant has amended 1, 7 and 12 to recite “root hub USB host port” in the claims. The term root hub in the context of a USB interface is well known. For example, referring to USB Serial Bus Specification 2.0, dated April 27, 2000.

1. Section 4.1 A USB system is made up of three definitional areas; USB interconnects (“hubs”), one USB host, and multiple USB devices. Section 4.1.1.2 - A USB device can either be a USB Hub or a USB function. (Copy Attached)
2. See Definitions in Chapter 2, Figure 4-1, and Section 4.1.1.1. “Root Hub” (copy attached) is a standard USB term. All entities connected to the USB system are done via a hub connection. Thus the USB host at Tier 1 of the USB system is connected via one or more hubs (i.e. “root hubs”) to other USB devices existing at Tier 2 on up.

Accordingly, Applicant respectfully submits that this term is well known and is inherently described in the present application.

Claim Rejections – 35 USC §112

The Examiner states:

2. The following is a quotation of the first paragraph of 35 U.S.D. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1 and 3-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The amendment to independent claims 1, 7, and 12 comprise limitations that do not appear to be supported by the original specification. The limitation of the USB peripheral port providing a connection to a second network can be found in all the amended independent claims, however there is no such second network disclosed in the specification (emphasis added). At page 3, lines 1-10 only one network is disclosed. Lines 1-2 on page 6 also only recites creating “a network”. No other references to a network can be found. The Examiner requests clarification.

4. Dependent claims 3-6, 8-11, 13, and 14 are rejected under 112-1st paragraph based on their dependency to the independent claims.

5. In light of the 112-1st paragraph rejection, for the purpose of compact prosecution, the Examiner will interpret the claims as best understood. The Examiner will interpret the claims as requiring the USB interface to comprise a port for coupling to a second network.

Applicant respectfully traverses these rejections.

The rejection is based upon use of the added term “network” to the original claims. The addition of this term to be included in the new submission was suggested by the current examiner as a way of clarifying the original claims. However, although the term “network” is used sparingly in the USB specification (see “Universal Serial Bus Specification 2.0”, 4/27/2000), a USB “network” is normally referred to as a “BUS” and not a network and the author has withdrawn the “network” reference as confusing and not required in the claims.

Claim Rejections – 35 USC §103(c)

Claims 1 and 3-14 are rejected under 35 USC §103(c) as being anticipated by Shu, (U.S. Patent No. 6,058,441) in view of Knight et al. (U.S. Pub. No. 2003/10/167345 hereinafter “Knight”).

The Examiner states:

8. Referring to Claim 1, Shu teaches a single computer USB interface (item 100 in Figure 1) comprising:
a USB Root hub host port (item 11, in figure 1 and); and
a USB peripheral port (item 12 in figure 1 and) wherein the USB peripheral port and the USB root hub host port are both active at the same time (see lines 23-27 of column 5, note the upstream and downstream devices are allowed to communicate with each other), wherein the USB root hub host port and the USB peripheral port are defined using predetermined signals (see lines 27-47 of column 3).

Shu fails to teach the host port couples to a fist [first] network via a first bus the peripheral port couples to a second network via a second bus (see paragraph 149, wherein the USB adapter is described as coupling two networks).

Knight teaches, a single USB interface comprising host port couples to a fist [first] network via a first bus the peripheral port couples to a second network via a second bus.

It would have been obvious to one of ordinary skill in the art at the time of the applicant’s invention to modify the device of Shu with the above teachings of Knight in order to carry out communication between a vehicle control network and a remote computer system as suggested by Knight (see paragraph 14).

9. Referring to claims 3 and 4, Shu teaches the devices can be connected in a peer-to-peer connection, or a one-to-many via the host and/or peripheral ports (see lines 44-48 of column 2, note a single device can be connected to the host or a chain of devices can be connected).

10. Referring to claim 5, Shu teaches a device only needs one physical port via the connector (see items labeled “FUNCTION” in figure 6, each peripheral has one port for which to connect with the interface).

11. Referring to claim 6, Shu teaches the predetermined signals comprise host differential data lines and peripheral differential data lines (see lines 27-47 of column 3).

12. Referring to claim 7, Shu teaches a USB network

comprising:

a first device, (item 100 in figure 1); the first device includes a single computer USB interface the first interface including a USB root hub port (item 11 in figure 1 and); a USB peripheral port (item 12 in figure 1 and), wherein the USB root hub host port and the USB peripheral port are defined using predetermined signals (see lines 27-47 of column 3); and

a second device for communicating with the first device (see items labeled "FUNCTION" in figure 6, each peripheral has one port for which to connect with the interface), using the predetermined signals wherein the USB peripheral port and the USB root hub host port are both active at the same time (see lines 23-27 of column 5, note the upstream and downstream devices are allowed to communicate with each other).

13. Referring to claims 8 and 9, Shu teaches the predetermined signals are within the USB standard (see lines 27-47 of column 3).

14. Referring to claim 10, Shu teaches the first and second devices can be any of a camera, computer, PDA, laptop device, handheld device, printer, and cellular telephone (see lines 1-7 of column 4).

15. Referring to claim II, Shu teaches the predetermined signals comprise host differential data lines and peripheral differential data lines (see lines 27-47 of column 3) .

16. Referring to claim 12, Shu teaches a device comprising:

a processor (see item 20 in figure 1 and lines 48-52 of column 3) and

a single computer USB interface (item 100 in figure 1) comprising:

a USB root hub host port (item 11 in figure 1 and); and

a USB peripheral port (item 12 in figure 1 and) wherein the

USB peripheral port and the USB root hub host port are both active at the same time (see lines 23-27 of column 5, note the upstream and downstream devices are allowed to communicate with each other), wherein the USB root hub host port and the USB peripheral port are defined using predetermined signals (see lines 27-47 of column 3).

Shu fails to teach the host port couples to a fist [first] network via a first bus the peripheral port couples to a second network via a second bus (see paragraph 149, wherein the USB adapter is described as coupling two networks).

Knight teaches, a single USB interface comprising host port couples to a fist [first] network via a first bus the peripheral port couples to a second network via a second bus.

It would have been obvious to one of ordinary skill in the art

at the time of the applicant's invention to modify the device of Shu with the above teachings of Knight in order to carry out communication between a vehicle control network and a remote computer system as suggested by Knight (see paragraph 14).

17. Referring to claim 13, Shu teaches the single computer USB interface requires a connection to only one physical I/O port if the device is coupled to a device with a connector that includes a USB host port and a USB peripheral port which are defined using the predetermined signals (see items labeled "FUNCTION" in figure 6, each peripheral has one port for which to connect with the interface).

18. Referring to claim 14, Shu teaches the predetermined signals comprise host differential data lines and peripheral differential data lines (see lines 27-47 of column 3).

Response to Arguments

Applicant respectfully traverses the above-identified rejections. Applicant will describe with particularity the differences between the cited references and the claimed invention herein below.

Present Invention

A single USB interface is disclosed. The single USB interface comprises a USB root hub host port coupled to a first USB bus and a USB peripheral port coupled to a second USB bus. The USB peripheral port and the USB root hub host port are both active at the same time. The USB root hub host port and the USB peripheral port are defined using predetermined signals. In a preferred embodiment the single USB interface is utilized in a network where at least one dual port USB (DPUSB) connector is connected to either standard USB connectors or other DPUSB connectors. By use of the single USB interface, a device in a network can act as both a host or a peripheral to other devices as well as create network peer-to-peer relationships utilizing the first and second buses. Use of DPUSB connectors also

provides the opportunity of new types of devices such as memory cards and cables that will greatly increase the ease of use of many intelligent electronic devices such as cameras and PDAs.

A single USB interface in accordance with the present invention in one embodiment contains two buses to a given computer; one that is coupled to a USB root hub host port and one that is coupled to a USB peripheral port. Since each USB bus contains only one host but may have many USB devices, the single USB interface of the recited invention results in the computer being part of two USB buses; namely, in a first bus which has the computer as a host and a second bus which has the computer as a device.

Argument

The intent of Shu is to provide an entity which Shu refers to as a “USB multi-function connecting device” (See the Shu Abstract) that is part of a single USB bus. For the examiner to claim that the Shu patent describes an entity that can be connected to two USB buses, the examiner must show evidence that Shu’s entity is capable of being part of more than one USB bus. Upon careful review of the Shu patent, the author can find no such evidence.

Members of a USB bus can only be one of three types: namely a USB host, a USB function, or a USB hub (See USB Specification 2.0, 4.1.1). The Shu patent clearly states that item 11 in Figure 1 of the Shu patent is an USB upstream port (See Shu 3:30-32). Since item 11 is an USB upstream port, the Shu entity must exist at USB Tier 2 or greater (see 4.1.1 of USB Specification 2.0). Thus the claimed entity of the Shu patent has no Tier 1 USB root hub host port output connection and as such

must be a USB function, a USB hub, or a combination of a USB function and a USB hub. From a reading of the Shu patent, the device is a USB hub device, albeit one that includes an intelligent processor used for configuring downstream USB functions.

The Examiner cites Knight as an example of a patent that describes a bridge device that has both a USB host port and a USB device port and as such is connected to two different USB buses. However, as has been clearly shown above, Shu's device is for use in a single USB bus at Tier 2 or higher (i.e., does not have a USB root hub host port), there is no indication in Shu that Shu's device is meant for operation in a multi USB bus topology.

The Examiner cites Shu's lines 44-48, column 2 as Shu claiming a peer-to-peer connection for the Shu entity. Below is the cited Shu text.

Further, the number of the connecting device may increase/decrease without constraint dependent upon the peripheral devices connected thereto so as to significantly reduce the system and equipment cost of the USB peripheral connection". This statement clearly describes the ability of the Shu entity to connect a changing number of USB functions connected to the outputs of the Shu entity and that these entities are members of a single USB bus. There is no reference to the Shu entity having a USB host port nor is there a need for the Shu entity to have a USB host port to function correctly. Also, there is no reference in the Shu patent to the multiple USB host connections required for any peer-to-peer network based upon USB topology. And, there is no reference anywhere in the Shu patent to peer-to-peer networks in any context.

These claim rejections represent that USB device with both an Upstream Port and a Downstream Port as being equivalent to the single connection (the DPUSB port) with both USB host signals and USB device signals, with both sets of signals active at the same time, as recited in Applicant's claims. In fact, as described previously, the Shu entity can exist only at USB Tier 2-Tier N and as such cannot contain a USB root hub host port.

Applicant respectfully submits that these above-cited rejections are based upon the same misrepresentation of the Shu entity as having a USB root hub host port. Examiner contends the Knight's bridge device that contains both a USB host port and a USB device port and then cite that the Knight bridge device and that it is obvious to one of ordinary skill that Shu's USB entity could also have multiple USB host and USB device ports. However, at the time of Shu's patent, the USB bus definition was equivalent to the time of Knight's device as far as the types of USB ports and devices that were realizable and also the same as far as the basic topology of USB buses. Since Shu makes no mention of his device having USB host port(s), Applicant contends that it was not obvious to Shu that his USB entity could or should exist anywhere else but in a single USB network at a Tier level 2 or greater. In fact, Shu's USB entity is only relevant in a single USB bus topology as a connection device for "increasing or decreasing ... peripheral devices" (Shu lines 44-48 column 2).

Applicant respectfully submits that Examiner has failed to understand the basic topology of the USB bus as described in the USB 2.0 specification with relation to Tier 1 and Tier 2-N devices which has led the examiner to misrepresent the claims of the Shu patent. It is hoped that under further consideration, the Examiner will now realize the benefits and novelty of a single USB interface recited in Applicant's claimed invention.

Applicant respectfully submits therefore, that independent claims 1, 7 and 12 are allowable over the cited reference. Applicant further respectfully submits that claims 3-6, 8-11 and 13-14 are allowable because they depend from an allowable base claims.

A single USB interface in accordance with the recited invention provides standard computers with many USB networking possibilities including hardware peer-to-peer connections.

Conclusion

In view of the foregoing, it is submitted that the claims 1 and 3-14 are allowable over the cited references and are in condition for allowance. Applicant respectfully requests reconsideration and allowance of the claims as now presented.

Applicants' attorney believes this application in condition for allowance. Should any unresolved issues remain, Examiner is invited to call Applicants' attorney at the telephone number indicated below.

Respectfully submitted,
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